

Resource Allocation Planning
James Webb Space Telescope Project
Deep Space Network Loading Assessment
2nd Revision - January 24, 2003
Roger Bartoo

Loading Study Description

This loading study covers the James Webb Space Telescope (JWST) project from Launch (August 1, 2011) through End-of-Prime-Mission (August 1, 2016). The work package consists of a tracking support plan with identified tracking resources and potential contention for tracking support with other missions operating on the Deep Space Network (DSN) within the same time frame.

The following restates the requirements identified by Section 920 and provided to the RAPSO. Requirements were provided to RAPSO verbally and by e-mail on January 6, and 7, 2003. These requirements were evaluated for the resources needed to satisfy them and a forecast of the supportable requirements was generated. A first pass, optimized support profile is established to minimize tracking and contention consistent with mission requirements.

This workable User Loading Profile for tracking support for the mission by phase are included below. No cost determination (aperture fees) was requested in this study.

Requirements

The requirements of the project are segregated into two mission phases.

Phases

Launch To Launch+90days

The nominal launch day for the James Webb Space Telescope (JWST) is August 1, 2011. The Launch phase includes all support from launch through launch plus 90 days. Coverage requirements are for 14 eight-hour passes per week during this period (week 31 through week 43). Nominal antenna setup (precal) times of 30 minutes with a 15-minute tear-down (post cal) time were used. All Maneuvers during this phase (e.g., Trajectory Correction Maneuvers) are assumed to be covered within the stated tracking requirements for the phase. It was assumed that there is no requirement for use of the 26-meter subnet for acquisition aide.

Launch+91days To End-of-Prime-Mission (EOPM) – Nominal Lagrange 2 Operations

From Launch+91days (October 31, 2011) to August 1, 2016, coverage requirements are for seven 3-hour 34-meter Beam Wave Guide 1 subnet passes per week with a nominal 30-minute setup time and 15-minute tear-down time. Passes are assumed to be alternating north-south passes (i.e., Canberra-Madrid or Canberra-Goldstone) utilizing two channels for X-Band up and

James Webb Spasce Telescope Forecasted Support On The 34-meter BWG-1 Subnet

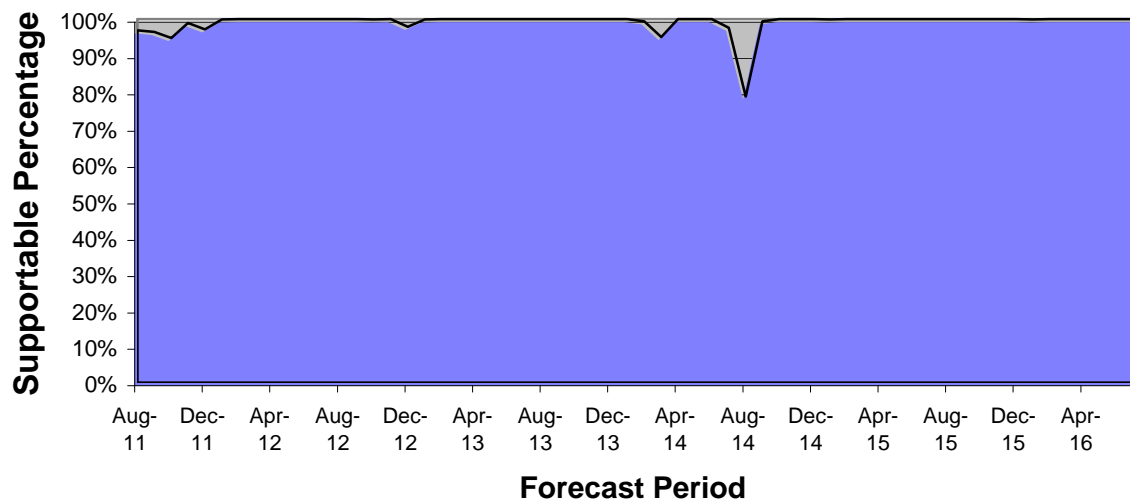


FIGURE 2: Forecasted Support for the James Webb Space Telescope on the 34-meter BWG-1 Subnet